

Application 10/501031

Response to Office Action dated 01/19/2007

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Claims 1-3, 7, 8, 10 and 13 are amended.

Listing of Claims:

1. (Currently Amended) An emulsification/dispersion system comprising:
 - ~~supply means for supplying a supplier that supplies~~ a liquid metal to be emulsified/dispersed;
 - an emulsification/dispersion apparatus for emulsifying/dispersing said liquid metal supplied from said ~~supply means supplier~~, by means of applying a shearing force;
 - a communication passage connect to an outlet portion of said emulsification/dispersion apparatus; and
 - a multistage depressurization module connected to the downstream of said communication passage, said multistage depressurization module including an inlet passage, an outlet passage, and at least two depressurization members located between said inlet and outlet passages and connected with each other in a multistage manner through a connection member, said multistage depressurization module being operable to apply to a given backpressure to the outlet portion of said emulsification/dispersion apparatus and to reduce said backpressure in a stepwise manner so that the depressurization member in the final stage provides a reduced pressure causing no bubbling in said outlet passage.
2. (Currently Amended) The emulsification/dispersion system according to claim 1, wherein said depressurization members are composed of at least one first depressurization member having a first inner diameter d_1 [[D₁]], at least one second depressurization member having a second inner diameter d_2 [[D₂]] and at least one third depressurization member having a third inner diameter d_3 [[D₃]], which are arranged in this order from the upstream side, wherein said first to third inner diameters ~~D₁, D₂, D₃~~

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$d_1, d_2,$ and d_3 are designed to satisfy the following relationship: $d_0 > d_2 > d_1$ and $d_2 > d_3 > d_1$
 $D_0, D_2 > D_3 > D_1$, wherein d_0 D_0 is the passage diameter of said outlet passage.

3. (Currently Amended) The emulsification/dispersion system according to claim 2, which satisfies the following relationship: $d_s > d_2$ $D_s > D_2$, wherein d_s D_s is the inner diameter of said connection member.
4. (Original) The emulsification/dispersion system according to claim 1, wherein all of said depressurization members have the same inner diameter, or at least one of said depressurization members on the downstream side has an inner diameter less than that of at least one of the remaining depressurization members on the upstream side.
5. (Original) The emulsification/dispersion system according to claim 4, wherein said connection member has an inner diameter greater than that of each of said depressurization members.
6. (Original) The emulsification/dispersion system according to claim 1, which includes a heat exchanger interposed in said communication passage.
7. (Currently Amended) A multistage emulsification/dispersion system comprising:
 - ~~supply means~~ a supplier for pressurizing a liquid material to be emulsified/dispersed, and supplying said pressurized liquid material;
 - a multistage emulsification/dispersion module including an inlet portion having an orifice ~~means~~, an outlet portion, a plurality of absorption cells interposed in a passage extending from said inlet and outlet portions and connected with each other in a multistage manner through a connection member;
 - a communication passage connected to an outlet portion of said multistage emulsification/dispersion module; and
 - a multistage depressurization module including an inlet passage connected to the downstream of said communication passage; an outlet passage opened to atmosphere, a plurality of depressurization members located between said inlet and outlet passages and

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connected with each other in a multistage manner through a connection member, said depressurization members being composed of at least one first depressurization member having a first inner diameter d_1 , at least one second depressurization member having a second inner diameter d_2 and at least one third depressurization member having a third inner diameter d_3 , which are arranged in this order from the upstream side, wherein said first to third inner diameters d_1 , d_2 , and d_3 are designed to satisfy the following relationship: $d_0 > d_3 > d_1$ and $d_2 > d_3 > d_1$, wherein d_0 is the passage diameter of said outlet passage.

8. (Currently Amended) The multistage emulsification/dispersion system according to claim 7, wherein said plurality of absorption cells of said multistage emulsification/dispersion module are composed of at least one first absorption cell having a first inner diameter D_1 , at least one second absorption cells having a second inner diameter D_2 and at least one third absorption cell having a third inner diameter D_3 , which are arranged in this order from the side of said orifice means, wherein said diameters D_1 , D_2 , D_3 are designed to satisfy the following relationship: $D_2 > D_1 > D_3$.

9. (Previously Presented) The multistage emulsification/dispersion system according to claim 7, which includes a heat exchanger interposed in said communication passage.

10. (Currently Amended) A multistage emulsification/dispersion system comprising:

~~supply means~~ a supplier for pressurizing a liquid material to be emulsified/dispersed, and supplying said pressurized liquid material;

a multistage emulsification/dispersion module including an inlet portion having an orifice means, and outlet portion, a plurality of absorption cells interposed in a passage extending from said inlet and outlet portions and connected with each other in a multistage manner through a connection member;

a communication passage connected to an outlet portion of said multistage emulsification/dispersion module; and

a multistage depressurization module including an inlet passage connected to the downstream of said communication passage, an outlet passage opened to atmosphere, a

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plurality of depressurization members located between said inlet and outlet passages and connected with each other in a multistage manner through a connection member,

wherein, provided said respective absorption cells, said communication passage and said respective depressurization members are defined as individual passage units each having a given passage diameter, the respective passage diameters of said passage units are determined according to the following rules:

(1) each of said passage units has either one of at least three different passage diameters D_S , D_M , D_B ($D_S < D_M < D_B$), wherein when the passage unit with the passage diameter D_M is connected to the downstream of the passage unit with the passage diameter D_S , the passage unit with the passage diameter D_B is connected between said two passage units; and

(2) said rule (1) is not essentially applied when any of said passage units is connected to the upstream side of the passage unit with the smallest passage diameter.

11. (Original) The multistage emulsification/dispersion system according to claim 10, which satisfies the following relationship $D_Q \geq D_B$, wherein D_Q is the inner diameter of said connection member.

12. (Original) A method of producing an emulsified/dispersed liquid, comprising the steps of:

giving a shearing force to a supplied liquid material to emulsify/disperse said liquid material, which applying to said liquid material a backpressure allowing said emulsification/dispersion to be performed without bubbling; and

reducing the backpressure of said emulsified/dispersed liquid in a stepwise manner so as to allow said emulsified/dispersed liquid to finally have a reduced pressure causing no bubbling even if it is released to atmosphere.

13. (Currently Amended) A method of producing an emulsified/dispersed liquid, comprising the steps of:

pressurizing and heating a dispersion liquid up to a given pressure or more and a given temperature of more to achieve the critical state of said dispersion liquid and giving

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a high shearing force to said dispersion liquid in critical state to cause emulsification/dispersion therein while applying a backpressure thereto; and
reducing the backpressure of the obtained emulsified/dispersed liquid in a stepwise manner using a plurality of depressurization members so as to allow said emulsified/dispersed liquid to finally have a reduced pressure causing no bubbling even if it ~~id~~ is released to atmosphere.